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ABSTRACT

This study provides an overview of expenditures for education and training by educational institutions in Australia, 1991-2001. The study used newly available data from the Australian Bureau of Statistics (ABS) and administrative data from the main sectors' reports on the size and trends in public and private education expenditures. It analyzed the aggregate effects of demographic change and changes in participation. Findings include the following: (1) demographic change has had only a minor effect on expenditures in recent years; (2) expenditures measured at current prices increased a little less than the gross domestic product (GDP) and the quantity of education provided increased less than the GDP; (3) growth in real expenditure per student has been confined to the school sector, at least in the last few years; (4) there has been a decline in the government expenditure per publicly funded annual hour of curriculum; (5) Australia's total education expenditures are a little below the middle of a list of countries, but it now ranks among the countries with the highest private levels of education expenditure. Recommendations were made for further investigation through sectoral analysis of the measures of price change and the methods of estimating chain volume measures, financial assistance for students by sector, the size of tax reduction provided for education expenses and donations, and the extent to which measures of expenditure can be related to other measures of output. (Contains 25 references and 10 tables.) (KC)

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Trends in educational expenditure

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Knowledge of the level and composition of expenditure on education and training and of who finances that expenditure are essential inputs to the review of the efficiency, effectiveness and equity in the provision of education and training.

This paper[1] provides an overview of data on expenditure on education and training in Australia and its possible use in answering some basic questions such as:

- what is the level of government and private expenditure in total and relative to GDP?
- what is the level of government expenditure relative to other government outlays?
- what is its growth over time?
- how much of the growth is a real change as distinct from a price change?
- how much of growth is attributable to demographic changes and to changes in participation or in intensity of training?
- who pays - what are the main sources of public and private finance?
- how do Australia's expenditure and sources of finance compare with other countries?
- what is the expenditure per student, or per hour of training, in different sectors of the system?

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In this paper, attention is given to expenditure on education institutions. Employer expenditure on workplace training is not considered in this paper. For a recent analysis of employer expenditure, see Long (2001).

The level of expenditure

Table 1 shows the education outlays in the 1990s. Estimated outlays on education increased by about 35% in the financial years 1993-1999. In the same years, the GDP grew slightly more so that the estimated share of GDP devoted to education fell from about 5.8% to 5.6%. Government outlays still make up most of the expenditures, though they declined relative to private expenditures in the period considered. The fastest growing element of government outlays was transfers to private institutions; notably private schools and private VET institutions for the delivery of education

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and training. Fixed capital formation was the slowest growing element. Student benefits grew relatively slowly in this period.

Government 'loans' to students under HECS are treated as advances and not as government outlays. The net increase in advances is shown in the bottom line of Table 1.

Government outlays on education make up about 14% of all government outlays. This has changed little in recent years. General government outlays relative to GDP have fallen slightly during the period of rapid economic growth since the early 1990s, from about 37% in 1992-1993 to 34% in 1999-2000.

Table 1: Expenditures on education, 1991-1992 to 1999-2000, current prices $b (Australia)

	Year ending June 30									
	1992	1993	1994	1995	1996	1997	1998	1999	2000	% increase 1993-1999
Government final consumption expenditure	15.8	16.3	16.6	17.1	17.6	18.7	19.5	21.0	21.6	29
Government gross fixed capital formation	1.0	1.2	1.0	1.1	1.1	1.3	1.1	1.3	1.4	11
Total government final expenditure	16.8	17.4	17.6	18.1	18.8	19.9	20.6	22.3	23.0	28
Government transfers to private sector	n/a	2.4	2.6	2.8	3.0	3.3	3.8	4.1	n/a	68
Student benefits*	1.6	1.7	1.8	1.8	1.9	1.9	1.9	2.1	n/a	22
Total government education Outlays**	n/a	21.6	22.0	22.7	23.7	25.1	26.3	28.4	n/a	32
Household final consumption expenditure**	4.7	5.0	5.3	5.7	6.2	6.9	7.7	8.3	8.7	65
Private gross fixed capital formation	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	63
Total private final expenditure	5.1	5.5	5.8	6.2	6.7	7.5	8.4	9.0	9.5	65
Private expenditure less government transfers	n/a	3.0	3.2	3.3	3.7	4.1	4.6	4.9	n/a	63
Total government and private expenditure less government transfers to private sector	**n/a**	**24.6**	**25.2**	**26.1**	**27.4**	**29.3**	**30.9**	**33.3**	**n/a**	**35**
Government outlays as % of total	n/a	0.88	0.87	0.87	0.86	0.86	0.85	0.85	n/a	
GDP	406	427	449	473	507	532	565	595	632	40
Total as %GDP	n/a	5.8	5.6	5.5	5.4	5.5	5.5	5.6	n/a	
Net government advances (HECS) $b		0.6	0.6	0.4	0.5	0.5	0.6	n/a	n/a	

*estimate

Source: ABS 5204.0, 5510.0 and 5518.0. 48.00.

Change in resources and change in prices

The share of the GDP that is spent on education is affected by:

- change in the GDP;
- change in the inputs in education and training, especially the number of teachers employed; and
- change in the prices of those inputs, especially teachers' salaries, relative to the overall price level.

Table 2 presents data on these factors. It provides estimates of 'gross value added' in the education industry including public and private education institutions. Gross value added differs from total expenditure on education in that it excludes non-employee payments such as supplies and services purchased from other industries and student benefits (see ABS 5216.0). In the case of public education, gross value added comprises the payments related to employees and consumption of fixed capital (depreciation).

Table 2 shows that in current prices, education gross value added increased at much the same rate as GDP, a fairly similar picture to that given for all outlays on education in Table 1. Table 2 also gives estimates in *chain volume measures*. The chain volume measures remove the effect of price changes over the period. These show that the volume of education (gross value added) grew by 22% in the eight years to 1999-2000 and the volume of GDP grew by 40%. This measure of education as a percentage of GDP fell from 4.9% to 4.2%. The reason for this is the difference in the price deflators. The implicit deflator for education rose by 25% while the deflator for GDP rose by only 11%.

Such an outcome is to be expected for 'non-market' industries, such as education and health, where production is measured in the National Accounts by the cost of the inputs and not by the sale of the service. The national accounts do not show any change in productivity in such areas (see ABS 5204.0, Table 19), whereas labour productivity in the market sector is estimated to have grown by 3% per annum in the period considered here (ABS 5204.0, Table 17). If wages and salaries in education move roughly in line with the general level of wages and salaries in the community, then it is to be expected that the implicit deflator for education will increase considerably more than the deflator for the GDP.

Table 2: Indicators of education and GDP: volume and price changes, 1991-1992 to 1999-2000 (Australia)

Year ending June	1992	1994	1996	1998	2000	% change 1992-2000
Education gross value added, current prices, education $b	18.3	20.9	22.2	25.1	28.0	53
GDP at current prices $b	406.0	449.4	507.0	564.7	631.8	56
Education gross value added % GDP	4.5	4.6	4.4	4.4	4.4	
Industry gross value added, chain volume measure, education, $b	21.5	24.1	24.3	25.9	26.3	22
GDP chain volume measure $b	442.0	477.0	520.3	565.1	621.0	40
Education chain, % GDP chain	4.9	5.0	4.7	4.6	4.2	
Implicit deflator education gross value added	0.85	0.87	0.91	0.97	1.07	25
Implicit deflator GDP	0.92	0.94	0.97	1.00	1.02	11

Source: ABS 5204.0

Demographic change and participation

Were the increases in the quantity of education the result of demographic change, increased participation rates or increased resources per student? The effect of demographic change and change in participation are now considered. Table 3 shows that the total population grew 10% in the period 1992-2000. However, growth was slow in the age groups where enrolments in education are highest (ages 5-24). The number aged 15-19 was only 2% higher at the end of the period and the numbers aged 20-24 were 5% lower. Growth was much larger among older persons. The population aged 30-64 grew by 15%. Overall, taking account of the higher rates of participation among younger age groups, changes in population would have added only about 4% to enrolments in the period.

Table 3: Population by selected age groups, 1992-2000 (Australia), '000

Age	1992	1994	1996	1998	2000	% increase 1992-2000
5-9	1280	1282	1306	1324	1331	4
10-14	1252	1280	1308	1313	1327	6
15-19	1323	1277	1279	1314	1349	2
20-24	1430	1440	1397	1357	1361	-5
25-29	1383	1362	1418	1470	1475	7
30-64	7539	7811	8102	8388	8691	15
Subtotal (5-64)	14206	14451	14811	15166	15534	9
Total population	17495	17855	18311	18730	19157	10

Source: ABS 3201.0

Table 4 shows the effects of the increase in participation rates that occurred from 1992-1997. The overall effect of increased participation up to the rates in 1997 adds 1% to overall enrolments. The increase in participation rates was greatest for persons aged 20-24 where enrolments increased by 7% while population fell 5%. The effects on the different education sectors are not uniform, as the increased enrolment among persons 30 and over is mainly in the VET sector.

The expansion of enrolments is highest in the post-school areas, where expenditures per student are higher than at school level on average. Preliminary estimates suggest that this would account for about 2% in addition to expenditures in the period.

Table 4: Approximate full-time equivalent enrolments at actual participation rates, 1992-1997, 1997 rates to 2000 - schools, TAFE and higher education combined (Australia), '000

	1992	1994	1996	1998	2000	% increase 1992-2000
5-14	2445	2473	2518	2538	2559	5
15-19	892	862	874	901	925	4
20-24	229	238	245	244	244	7
25-29	70	69	79	82	82	17
30 and over	139	136	158	163	169	21
Total	3776	3778	3874	3928	3980	5

Source: Based on data from ABS 3201.0, DETYA (1999a). Part-time enrolments in higher education and TAFE have been approximately converted to full time equivalent numbers.

Who bears the cost?

Table 1 shows a rising share of private expenditures, though only from 12% to 15% of the total. Also note that the private share would be lower throughout the period if the net addition to HECS advances were deducted from net private expenditures.

Part of the burden of private expenditure is covered by tax deductions. Self-education expenses related to employment or donations for capital expenditures in educational institutions can be claimed. Tax expenditures are analysed each year (Treasury 2000) and further analysis will be made of this aspect of educational finance.

The states and territories provide the majority of outlays for education and training from their general revenues - which include general financial assistance grants from the Commonwealth. Commonwealth's specific payments for education rose quite sharply in the early 1990s, from 37 to 44%, but have since fallen to about 42%. The states provide the bulk of public funds for schools and VET, while the Commonwealth provides nearly all the public funds for higher education and for student assistance.

How do our aggregate expenditures compare with other countries?

Total general government outlays on all purposes including education, health and social security as a percentage of the GDP are shown in the last column of Table 5. Only Korea, US and Ireland have a lower rate of total government outlay than Australia. In contrast, Austria, France, Denmark and Sweden have rates of outlay in excess of 50% of GDP.

Table 5 also provides comparisons with a range of OECD countries for government and private educational expenditures (excluding student assistance for living expenses). Australia is shown to be the fourth lowest in public expenditure, but tenth lowest out of 23 countries in combined public and private expenditures on educational institutions. Australia has a higher rate of private expenditure on education than most European countries. Only Japan, Germany, Greece, Korea and US have higher rates of private expenditure. Germany is seen to have a high level of private expenditure only because employer expenditure on apprenticeship is included in their data. In several of the countries including Australia, expenditures on education are shown to have increased in the period 1990-1997. This differs from Table 1, where education outlays in Australia were seen to decline slightly as a percentage of GDP. The main reason is the difference in the time periods under consideration.

The issues of funding of education and training and the possible alternative forms of public and private finance are discussed further in Burke (2001b).

Table 5: Public and private educational expenditures and general government total outlays as a percentage of nominal GDP

	Education expenditures					General government total outlays
	1997				1990	1999
	Direct public expenditure for educational institutions	Private payments to educational institutions	Total public and private expenditure for educational institutions*	Total for tertiary educational institutions	Total public and private expenditure for educational institutions	
Australia	4.3	1.1	5.6	1.7	4.9	32.3
Austria	6	0.4	6.5	1.5	m	50.7
Belgium (Fl.)	4.8	0.4	5.2	0.9	m	47.9
Canada	5.4	0.7	6.5	2	5.7	40.2
Czech Republic	4.5	0.7	5.2	0.8	m	46.0
Denmark	6.5	0.3	6.8	1.2	6.4	54.3
Finland	6.3	x	6.3	1.7	6.4	47.1
France	5.8	0.4	6.3	1.2	5.6	52.2
Germany	4.5	1.2	5.7	1.1	m	45.6
Greece	3.5	1.4	4.9	1.2	m	43.5
Hungary	4.5	0.6	5.2	1	5.3	46.9
Iceland	5.1	0.6	5.7	0.7	4.8	32.9
Ireland	4.5	0.4	5	1.4	5.2	31.0
Italy	4.6	0.1	4.8	0.8	m	48.3
Japan	3.6	1.2	4.8	1.1	4.7	38.1
Korea	4.4	2.9	7.4	2.5	m	25.5
Luxembourg	4.2	m	m	m	m	na
Mexico	4.5	1	5.5	1.1	m	na
Netherlands	4.3	0.1	4.7	1.2	m	43.2
New Zealand	6.1	m	m	m	m	40.8
Norway	6.6	m	m	1.4	m	46.1
Poland	5.8	m	m	m	m	44.5
Portugal	5.8	0	5.8	1	m	44.7
Spain	4.7	0.9	5.7	1.2	4.9	38.6
Sweden	6.8	0.2	6.9	1.7	m	55.9
Switzerland	5.4	0.5	6	1.1	m	na
Turkey	m	m	m	m	3.2	na
United Kingdom	4.6	m	m	1	m	39.3
United States	5.2	1.7	6.9	2.7	m	30.1
Country mean	5.1	0.8	5.8	1.3	5.2	na
Weighted total**	4.8	1.2	6.1	1.7	5	37.8

Source: OECD (2000b, Table B1.1a, c) and OECD (2000a, Annex Table 28)

Legend: m = missing data; x = included in another category; n = negligible; *includes public subsidies to private

sector for expenditure on educational institutions; **average weighted by population of each country.

Sectors

The aggregate expenditures hide changes across the sectors. To consider this, we first note the distribution of public outlays, including student benefits, in the main sectors. Table 6 shows that about 60% of government outlays on education goes to schools, nearly 20% to universities and a little over 10% to TAFE.

Table 6: Government outlay on education by sector, 1997-1998, $b (Australia)

	Consumption expenditure	Capital	Student benefits	Other	Total***
Schools	10.0	0.7	0.7	3.4	14.7
TAFE	2.2	0.3	0.2	0.1	2.7
Universities	3.3	0.8	0.9	0.1	5.1
Total***	17.7	1.8	1.9	3.8	25.1

Source: ABS Catalogue 5510.0. ***Total includes other expenditures such as pre school and transport.

School expenditure

Much of the growth in school enrolments, and therefore in the rate of expenditure, has occurred in 'Other non-government' schools, which are largely privately funded. The savings to governments are offset to some extent by the growth in government funding of non-government schools in recent years. There has been an *apparent* growth in government recurrent funding of government schools. This is shown in Table 7. The nominal amount increased over 30% from 1993-1999. Since there was virtually no change in student numbers in government schools, per student expenditure also increased by about 30%. At (approximate) constant prices, the increase appears to have been about 13%.

The increases for non-government schools are much larger. Student numbers have increased by 12%. Enrolments in Catholic schools have increased little and nearly all the increase in enrolments is in Other non-government schools which operate at higher levels of expenditure than Catholic schools. It is not surprising then to find overall a substantial increase in average expenditure per student in non-government schools, though the estimated figure of 25% in constant prices seems large.

As a check, the ratio of students to teachers was considered. The average ratio of students to teachers has fallen very slightly from 15.0 to 14.9 in government schools and fallen more notably in non-government schools from 16.1 to 15.0. It may be

noted that Other non-government schools devote more of their expenditures to non-teacher expenditures than government or Catholic schools.

Table 7: Recurrent expenditure on government and non-government schools, current prices

	Government (financial year) $m	Students '000	$ per student	$ per student 1998 prices	Non-government $m	Students '000	$ per student	$ per student 1998 prices
1990	8215	2193	3745	4873	3035	848	3578	4656
1993	9666	2228	4338	4856	3564	870	4095	4584
1994	9888	2215	4464	4996	3800	884	4296	4809
1999	12703	2248	5652	5486	5768	979	5892	5719
% 1993-1999	31	1	30	13	62	12	44	25

Source: Data from MCEETYA (2000), MCEETYA (annual), ABS, Catalogue no.6306.0.

Note: The data on government and non-government expenditures are not compiled on the same standards; it is the trend over time rather than the actual levels that should be given attention.

There is wide variation in the changes across states. There has been an increase in expenditure per student in several states and reductions in expenditure in others (eg in Victoria, which had above-average expenditures at the start of the decade).

VET revenue and expenditure

Changes in the nature of the VET sector and major changes in the data collections mean that considerable courage is needed to make comparisons over time. Table 8 reports VET revenues over the 1990s. The total government share is shown to fall from 87% to 82% of the total. The share of public funds coming from the Commonwealth increased markedly with 'growth' funds provided in the 1990s up to 1997, but has declined since then. The other notable change is the growth in 'fee for service' which includes overseas student fees, payments by industry, full-fee payments by Australian students and payments by governments other than the regular funding to public institutions. There has not been a marked change in student fees for publicly funded programs. Most state and territory authorities cap the level of tuition fees at about $1 per contact hour.

Table 8: VET operating revenues, 1989-1990 to 1999, current prices (Australia)

	1989-1990		1993		1997		1999	
	$m	%	$m	%	$m	%	$m	%
State Government	1,558	74	1,828	63	2,126	56	2,226	59
Commonwealth Government	283	13	619	21	947	25	828	23
Fee for service	85	4	219	8	351	9	341	9
Student fees and charges	71	3	102	4	156	4	160	4
Ancillary trading & other	113	5	130	4	207	5	196	5
Total	2,109	100	2,898	100	3,787	100	3,751	100

Source: National Centre for Vocational Education Research (NCVER) (2000 and earlier publications).

Note: Changes in the collection and the introduction of accrual accounting from 1997 affect comparisons over time.

ANTA (2000) reports public expenditure per 'annual hour curriculum' (AHC) delivered in government-funded VET programs. Estimates are also made of cost per hour of successful module completion. Changes in the financial and student statistical systems mean that comparisons prior to 1997 are not feasible. Table 9 provides the most recent data at constant prices. Expenditure per hour has declined 10% in the years 1997 to 1999[2]. Total hours have increased 12%.

There are remarkable differences among the states, which reflect differences in state management, funding and staffing policies. These need to be explored in detail and linked to measures of quality before conclusions can be drawn as to the relative success of different state policies. A factor in this consideration is the estimate of the relative difficulty of the various states and territories in providing VET. The Grants Commission, for example, estimates that the Northern Territory requires twice the Australian average to provide a similar level of service per hour of training.

Table 9: Government recurrent expenditure per publicly funded annual hour of VET curriculum, 1997-1999 (1999 prices) and total adjusted publicly funded hours (million)

		NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Australia
1999	Expend $	14.5	9.3	13.4	11.8	13.0	15.8	19.6	15.1	12.6
	Hours	86.3	72.4	40.2	20.5	24.0	4.7	3.1	4.6	255.6
1998	Expend $	15.3	10.4	12.3	13.6	13.4	16.6	27.7	17.1	13.2
	Hours	83.0	67.5	42.7	16.9	22.1	4.3	2.3	4.4	243.4
1997	Expend $	15.0	10.5	14.9	15.6	15.1	19.0	28.8	17.2	14.0
	Hours	83.0	63.2	36.3	15.3	19.7	3.9	2.0	3.3	227.8

Source: ANTA (2000, vol 3, p 158).

Higher education

Universities receive their public funds from the Commonwealth, but are nearly all state institutions. Their unusual status leads to their being classified in a Multi-Jurisdictional Sector by the ABS. As a result, there are published data for the operating revenues and expenses of universities in the Government Finance Statistics (5512.0), whereas there are no separate operating statements for other education sectors. Universities received $8725 million in 1998-1989, of which only 50% or about $4400 million was direct grants from government. In addition, governments could be the source of some of the 'Other revenues' and some of the 'sales'. Revenue from sales of goods and services includes full-fee payments and also implicit fees from students funded under HECS. To provide an indication of the size of this factor, students' liability for HECS for 1998 was $1450 million. This was partially offset by up-front payments of about $240 million and by about $620 million received in voluntary payments and repayments through the tax system.

An increase in the share of the cost of higher education is borne by students, and real expenditures per student have been reduced. The share of expenditure borne by students was affected mainly by the decision in 1996 to increase substantially the level of HECS charges for certain courses, to increase the rate of repayment and to reduce the threshold income at which the repayments had to begin.

The changes in the base operating grant used to fund Australian students (excluding full-fee students) in the universities is shown in Table 10. Base grants per planned EFTSU and actual EFTSU are shown, and also HECS receipts per actual EFTSU. HECS receipts per EFTSU have nearly doubled to $2100 from 1996-1999. From Table 17, it appears that funds per student received by universities have changed little. However the method of expressing the expenditures in year 2000 prices 'does not reflect actual factor price movements but reflects the increase the Commonwealth provides to institutions each year towards the increases in salary and non-salary costs' (DETYA 2000, p 199). The DETYA cost adjustment factor with base December 1995 was 1.067 for 1999. Actual cost changes are greater than this, though a precise estimate is not available[3].

Table 10: Commonwealth base operating grant to higher education institutions per planned and actual EFTSU (Australia)

	1990	1993	1996	1999
Base operating grant $m	3,773	4,203	4,751	4,784
Planned EFTSU '000	335	374	417	413
$ per planned EFTSU	11,258	11,227	11,384	11,585
Actual EFSTU '000	341	386	439	457
$ per actual EFTSU	11,065	10,897	10,823	10,463
HECS up-front, voluntary payments and repayments $m	133	243	500	981
$ HECS receipts per actual EFTSU	389	630	1,139	2,146

Source: AVCC Funding Tables (2000). EFTSU = equivalent full-time student unit.

Note: All amounts are expressed in 2000 price levels using DETYA's cost adjustment factor from 1996 and various price indexes for the earlier period. The base operating grant excludes funding for the Commonwealth Industry Places Scheme, excludes capital roll-in and includes adjustment to the operating grant (as a result of net over-enrolment) of $49.2m for 1999.

Summing up

This paper has used newly available ABS data and administrative data for the main sectors to report on the size and trends in public and private education expenditures. The effects of demographic change and changes in participation have been analysed at an aggregate level. Demographic change has had only a minor effect on expenditure in recent years, and changes in participation rates had an even smaller effect (though the effects of changes in participation since 1997 are yet to be incorporated in the analysis).

Expenditure measured at current prices increased a little less than the GDP in the period from 1991-1992. Adjusting for price changes, the quantity of education provided increased less than the GDP. However, there was a considerable increase in the quantity provided: larger than 14% and perhaps over 20%. Compared with measures of the changes in enrolments and even allowing for shifts to the more expensive sectors, the growth in education exceeded the growth in 'weighted' student numbers.

At least in the last few years, the growth in real expenditure per student has been confined to the school sector. In publicly funded higher education, there has been a decline in real expenditure per EFTSU. In VET there has been a decline in the government recurrent expenditure per publicly funded annual hour of curriculum.

Brief comparisons have been made with other OECD countries. Australia's total expenditure comes in at a little below the middle of the list but its government expenditure is near the lower end. Australia now ranks among the countries with the highest private levels of education expenditure.

There is not a great deal of detail in the ABS education data. While there is more detail available for the separate sectors they differ in coverage, and comparability is therefore limited. Matters for further attention are:

- sectoral analysis of the measures of price change and the methods of estimating chain volume measures;
- financial assistance for students by sector;
- the size of tax reduction provided for education expenses and donations; and
- the extent to which measures of expenditure can be related to other measures of output.

Notes

1. This paper is based on Burke (2001a).

2. As indicated earlier, the relative cost changes in the education sector are likely to be considerably higher for the GDP as a whole. Use of an education-specific price deflator for the estimates may show a more substantial decline in resources per annual hour.

3. University academic salary rates had risen about 12 percent from december 1995 to mid 1999.

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